What Is Claimed Is:

1. A gene which encodes a protein having high-affinity choline transporter activity.

2. A gene which encodes a protein (a) or (b) described below;
(a) a protein comprising an amino acid sequence represented by Seq. ID No. 2,
(b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.2, and having high-affinity choline transporter activity.

3. DNA containing a base sequence represented by Seq. ID No. 1 or its complementary sequence and a part or a whole of these sequences.

4. DNA derived from a nematode which hybridizes with DNA comprising a gene according to claim 3 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

5. A gene which encodes a protein (a) or (b) described below;
(a) a protein comprising an amino acid sequence represented by Seq. ID No. 4,
(b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.4, and having high-affinity choline transporter activity.

6. DNA containing a base sequence represented by Seq. ID No. 3 or its complementary sequence and a part or a whole of these sequences.

7. DNA derived from a rat which hybridizes with DNA comprising a gene according to claim 6 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

8. A gene which encodes a protein (a) or (b) described below;
(a) a protein comprising an amino acid sequence represented by Seq. ID No. 6,
(b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.6, and having high-affinity choline transporter activity.

9. DNA containing a base sequence represented by Seq. ID No. 5 or its complementary sequence and a part or a whole of these sequences.

10. DNA derived from a human which hybridizes with DNA comprising a gene according to claim 9 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

11. A gene which encodes a protein (a) or (b) described below;
(a) a protein comprising an amino acid sequence represented by Seq. ID No. 8,
(b) a protein comprising an amino acid sequence where one or

a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.8, and having high-affinity choline transporter activity.

12. DNA containing a base sequence represented by Seq. ID No. 7 or its complementary sequence and a part or a whole of these sequences.

13. DNA derived from a mouse which hybridizes with DNA comprising a gene according to claim 12 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

14. A protein having high-affinity choline transporter activity.

15. A protein comprising an amino acid sequence represented by Seq. ID No. 2.

16. A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.2, and having nematode high-affinity choline transporter activity.

17. A protein comprising an amino acid sequence represented by Seq. ID No. 4.

18. A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.4, and having rat

high-affinity choline transporter activity.

19. A protein comprising an amino acid sequence represented by Seq. ID No. 6.

20. A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.6, and having human high-affinity choline transporter activity.

21. A protein comprising an amino acid sequence represented by Seq. ID No. 8.

22. A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.8, and having mouse high-affinity choline transporter activity.

23. A fusion protein being constructed by expressing a cDNA encoding fusion proteins of a protein having high-affinity choline transporter activity and a marker protein and/or a peptide tag.

24. The fusion protein according to claim 23, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 15 or 16.

25. The fusion protein according to claim 23, wherein the protein having high-affinity choline transporter activity has

rat high-affinity choline transporter activity according to claim 17 or 18.

26. The fusion protein according to claim 23, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 19 or 20.

27. The fusion protein according to claim 23, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 21 or 22.

28. An antibody which specifically binds to a protein having high-affinity choline transporter activity.

29. The antibody according to claim 28, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 15 or 16.

30. The antibody according to claim 28, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 17 or 18.

31. The antibody according to claim 28, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 19 or 20.

32. The antibody according to claim 28, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 21 or 22.

33. The antibody according to any one of claims 28 to 32, wherein the antibody is a monoclonal antibody.

34. A host cell containing an expression system which can express a protein having high-affinity choline transporter activity.

35. The host cell according to claim 34, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 15 or 16.

36. The host cell according to claim 34, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 17 or 18.

37. The host cell according to claim 34, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 19 or 20.

38. The host cell according to claim 34, wherein the protein having high-affinity choline transporter activity has mouse

high-affinity choline transporter activity according to claim 21 or 22.

39. A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome.

40. The non-human animal according to claim 39, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 15 or 16.

41. The non-human animal according to claim 39, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 17 or 18.

42. The non-human animal according to claim 39, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 19 or 20.

43. The non-human animal according to claim 39, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 21 or 22.

44. The non-human animal according to any one of claims 39 to 43, wherein the non-human animal is a mouse or a rat.

45. A preparing method of a cell having high-affinity choline transporter activity characterized in introducing the gene or the DNA according to any one of claims 8 to 10 into a cell whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient on its chromosome.

46. The preparing method of a cell having high-affinity choline transporter activity according to claim 45, wherein the cell having high-affinity choline transporter activity is integrated with the gene or the DNA according to any one of claims 8 to 10 in its chromosome, and stably shows high-affinity choline transporter activity.

47. A cell having high-affinity choline transporter activity being obtainable by the preparing method of a cell having high-affinity choline transporter activity according to claim 45 or 46.

48. A screening method of a promoter or a suppressor of high-affinity choline transporter activity characterized in measuring/evaluating high-affinity choline transporter activity of the protein having high-affinity choline transporter activity according to any one of claims 14 to 22 in the presence of a subject material.

49. A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell membrane or a cell which expresses a protein having high-affinity choline transporter

activity is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell membrane or the cell is measured/evaluated.

50. The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 49, wherein the cell membrane or the cell which expresses a protein having high-affinity choline transporter activity is the host cell containing an expression system which can express a protein having high-affinity choline transporter activity according to any one of claims 34 to 38, or is the cell having high-affinity choline transporter activity according to claim 47.

51. The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to any one of claims 48 to 50, wherein the protein having high-affinity choline transporter activity is a recombinant protein.

52. A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell obtained from the non-human animal according to any one of claims 39 to 44 is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell is measured/evaluated.

53. A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity.

54. A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal whose function of a gene encoding a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity.

55. A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal whose function of a gene encoding a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity in comparison with the case using wild-type non-human animal.

56. The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-

affinity choline transporter expression according to any one of claims 52 to 55, wherein the non-human animal is a mouse or a rat.

57. A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to any one of claims 48 to 56.

58. A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to any one of claims 48 to 56.

59. A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the protein according to any one of claims 14 to 22, and/or the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 57 as an active component.

60. A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the protein according to any one of claims 14 to 22, and/or the material which suppresses the activity or the expression of a protein having high-affinity choline transporter activity according to claim 58 as an active

component.

61. A diagnostic method for diseases relating to the expression or the activity of a high-affinity choline transporter characterized in comparing a DNA sequence encoding a high-affinity choline transporter in a sample to a DNA sequence encoding the protein according to claim 19 or 20.

62. A diagnostic probe for Alzheimer's disease comprising a whole or a part of an antisense strand of DNA or RNA encoding the protein according to claim 19 or 20.

63. A diagnostic drug for Alzheimer's disease characterized in containing the diagnostic probe according to claim 62 and/or the antibody according to any one of claims 28 to 33.